



Company Profile and Development of High Speed Rail Services



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1. Spain's Railway Undertaking

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RENFE-Operadora

- RENFE-Operadora is the main railway undertaking in Spain.
- It is a Government Entity.
- It is the only passenger train operator in the General Interest Network and the main freight operator.



RENFE-Operadora organization

Corporate centre
Employees 917

PASSENGERS:

- High Speed
- Long Distance
- Regional
- Commuter

Employees
7,819

**FREIGHT
&
LOGISTIC SERVICES**

Employees
1,673

**MANUFACTURING
& MAINTENANCE
OF
ROLLING STOCK**

Employees
3,415

TOTAL PERSONNEL 13,824

Main traffic figures (2010)

PASSENGER TRAFFIC:

PASSENGER / Km (Millions)	21,021.6
PASSENGER (Millions)	456.6

FREIGHT TRAFFIC:

NET TONNES / Km (Millions)	7,417.3
NET TONNES	16.1

PRODUCTION:

TRAINS / DAY	~ 5,000
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Investment in new trains

(Million €)	2006	2007	2008	2009	2010	TOTAL
	1,036	1,208	1,249	1,064	1,216	5,772



SOURCE: "Worldwide Market Study. Status Quo and Outlook 2016". UNIFE 2008

2. Similarities California / Spain



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Similarities California / Spain

DEMOGRAPHIC DATA	CALIFORNIA	SPAIN
SURFACE AREA (sq mi)	163,696	194,845
POPULATION (Millions)	37.25	47.02
POPULATION DENSITY (People per sq mi)	234.4	241.3
GDP per capita (Dollars)	43,104	30,639

TRANSPORT INFRASTRUCTURE:	CALIFORNIA	SPAIN
GENERAL RAILWAY NETWORK (miles)	7,712	8,610
HIGH SPEED RAILWAY NETWORK (miles)	---	1,301

Similarities between corridors: San Francisco - Los Angeles (California) / Madrid - Barcelona (Spain)

INHABITANTS

S.Francisco: 805,235
S.Fco. Bay Area: 8,736,000
Los Angeles: 3,792,621
L.A. Area: 9,818,605

Madrid: 3,273,049
Madrid Area: 6,458,684
Barcelona: 1.619.337
Barcelona Area: 5,511,147



Max. speed: 220 mph
Travel time: 2h:38'
Distance: 432 miles



Max. design speed: 218 mph
Max. speed today: 186 mph
Travel time: 2h:38'
Distance: 390 mi



3. High Speed Railway Services

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***3.1 First, a successful experience:
High Speed Madrid-Sevilla***

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The beginnings of high speed in Spain

GOVERNMENT DECISION - October, 1986

To build a new line Madrid-Sevilla
471 km (293 mi):

-Three goals,

- Less distance
- Less travel time
- More capacity

COMMERCIAL OPERATION - April, 1992

Five service factors:

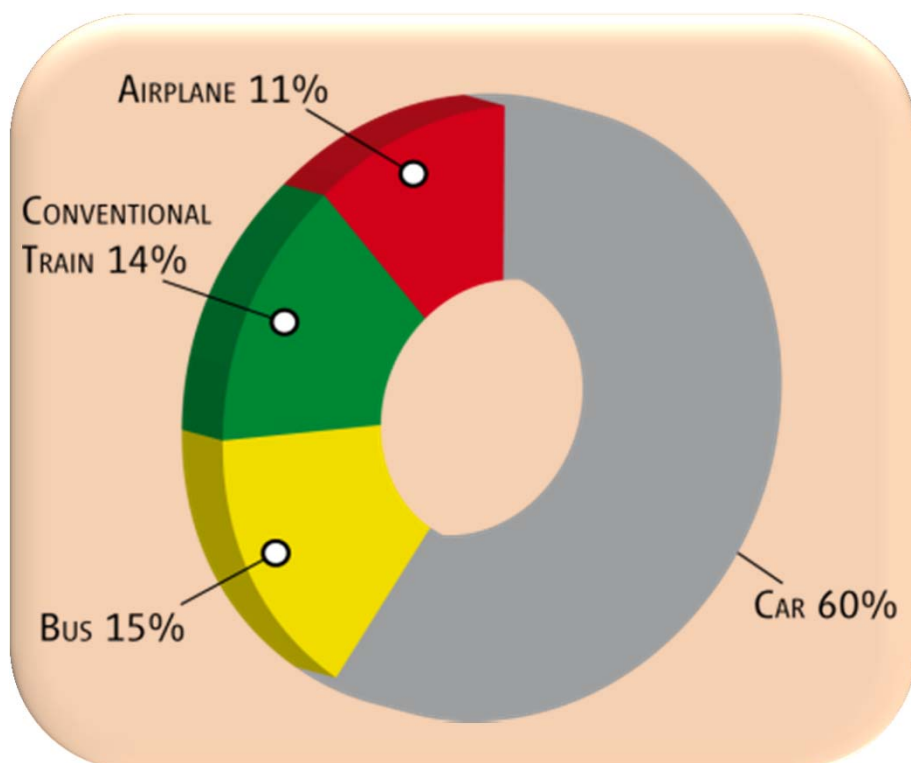
- Travel time
- Comfort
- Quality (on board and in stations)
- Price
- On-time commitment



The result of this success, a new modal distribution

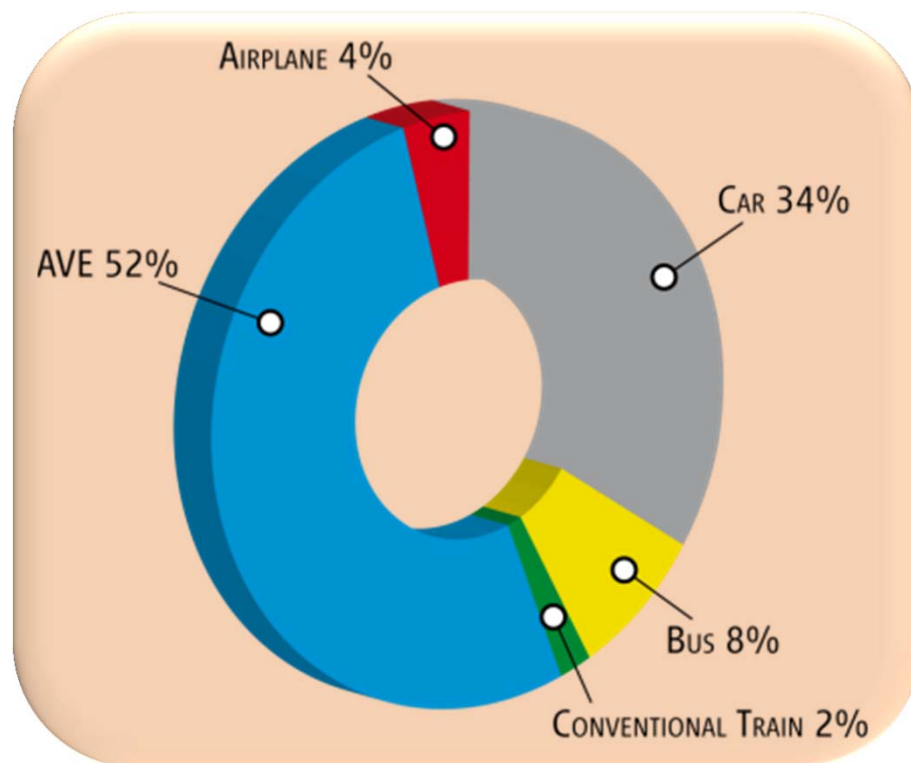
1991

Before AVE

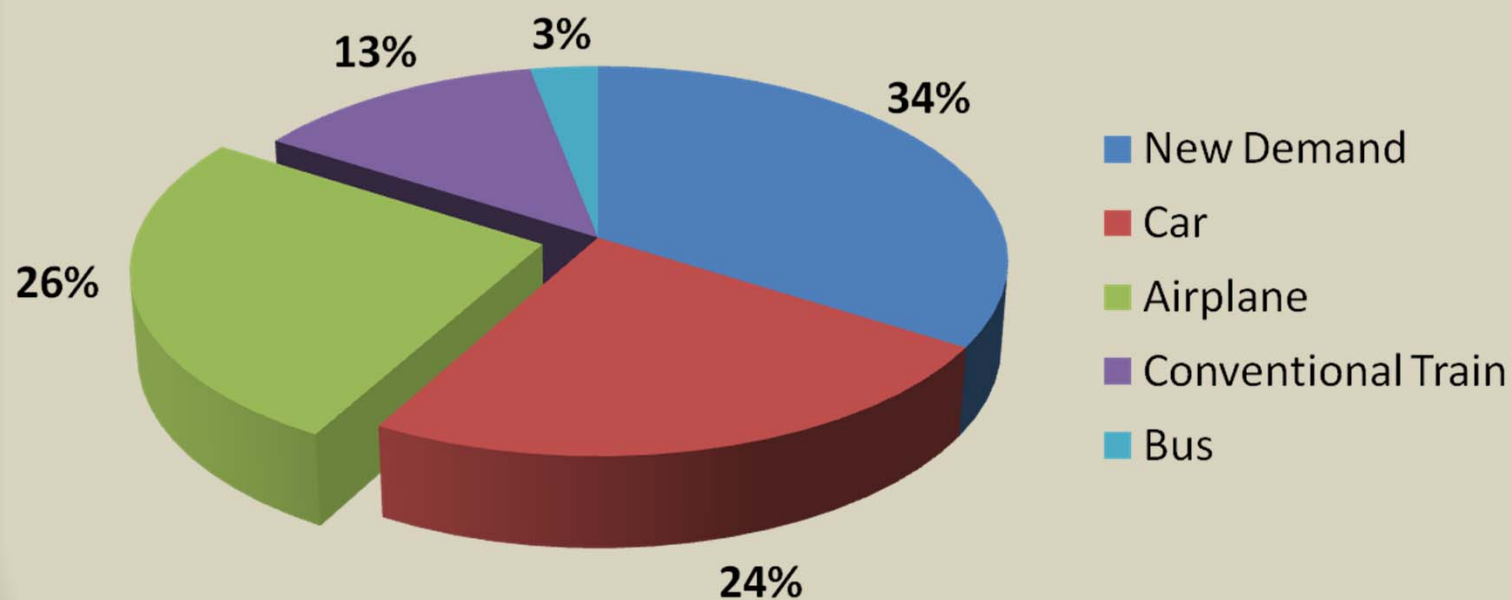


1993

After AVE



Source of demand in Madrid-Sevilla corridor (first year results)



3.2. Renfe's Model of HSR Services



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High speed services. Renfe's model

- ❑ Different approach than in other railway companies.
- ❑ Three distinct services using the same infrastructure:



Long Distance → Commercial service



2/3 classes



Regional → Public service



Single class



Long Distance
Dual Gauge → Commercial service



2 classes

DIFFERENT
FARES,
AFFORDABLE
TO ALL

The high quality of Renfe's AVE service begins before the customers access the train ...



Customer service offices



personalized service

Through our service “Atendo”, we guarantee the right to travel to people with reduced mobility

Atendo

atención a personas
con discapacidad



Regionals Trains



AVE Class 102

People with reduced mobility assisted in our trains:

□ In 2010 293,998 assists (*)

(*) Representing an **increase of 24.80%** compared to 2009

Madrid Puerta de Atocha - AVE club lounge



AVE CLUB LONGE



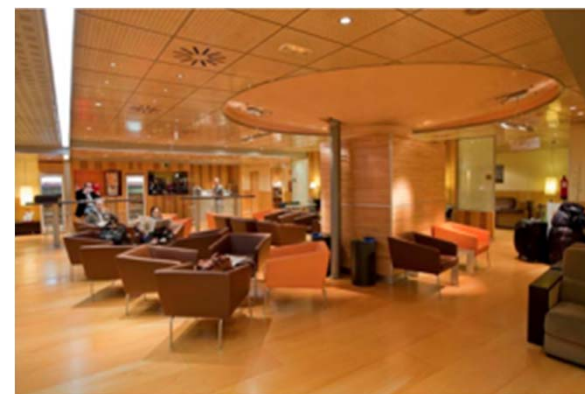
MODERNITY



DESIGN



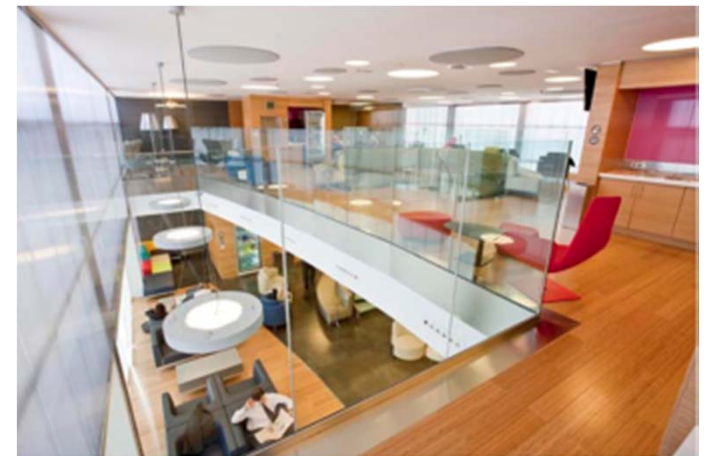
COMFORT



Valencia Joaquín Sorolla - AVE club lounge



NEW CONCEPT



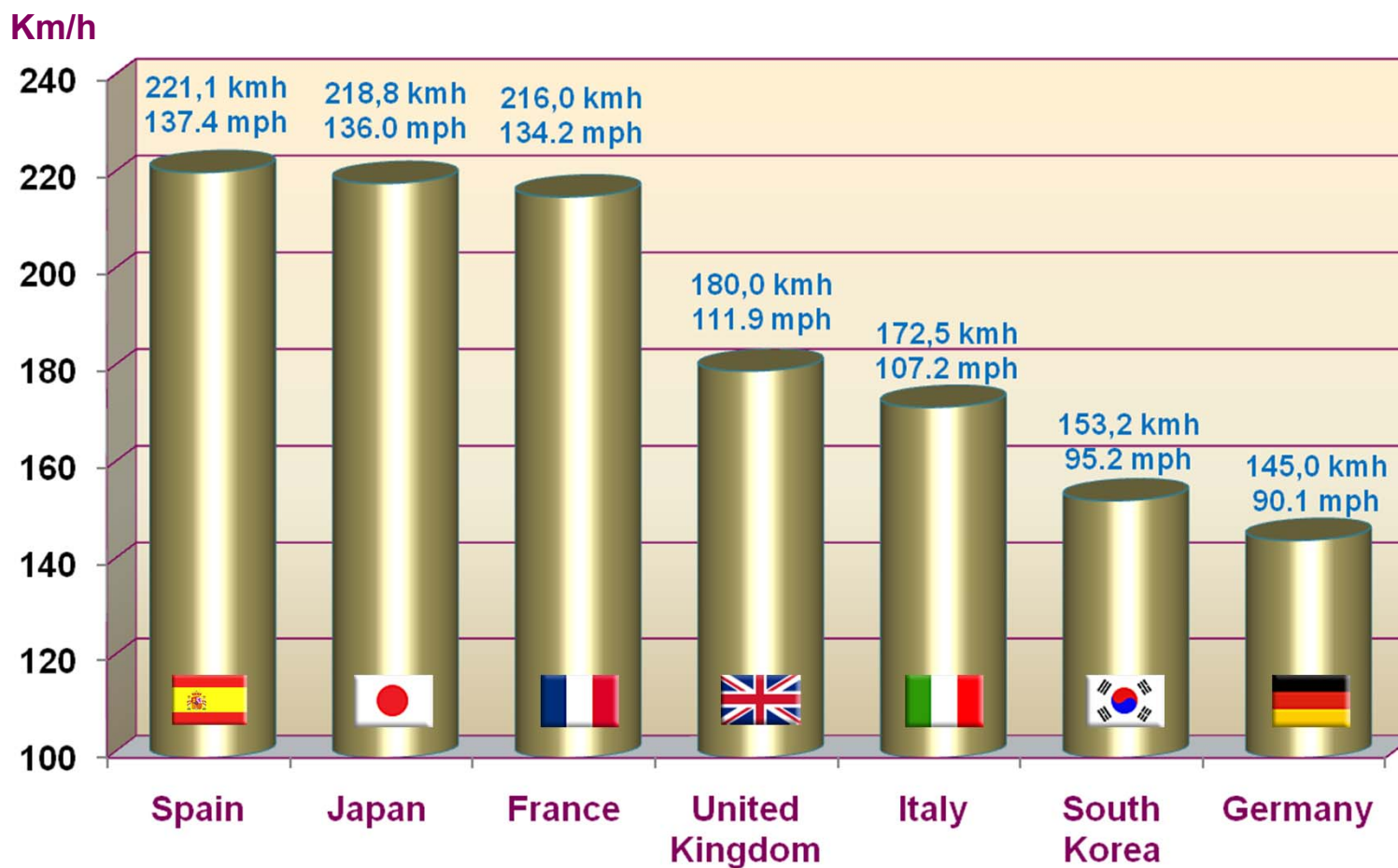
- Warm & welcoming environment
- Avant-garde furniture
- Innovative lighting

AVE trains - service on board



Average commercial speed of high speed trains

SPAIN, FIRST IN THE WORLD



Brand image



Brand awareness

RENFE	98%
AVE	92%
RENFE Cercanías	87%
Airline A	78%
Airline B	77%
Airline C	62%
Airline D	58%
Bus A	44%
•	
•	
•	

MillwardBrown 2011

Premium brand

Brand value:



1	Bank	
2	Bank	
3	Telecom	
4	Retail	
	•	
	•	
	•	
30	Airline	579 M.€
	•	
	•	
38	Renfe	482 M.€
	•	
	•	

2010

Coleman
Coleman worldwide partner

Effective Branding 20 AÑOS

High Speed - Long Distance 300/350 Km/h (186/218 mph)



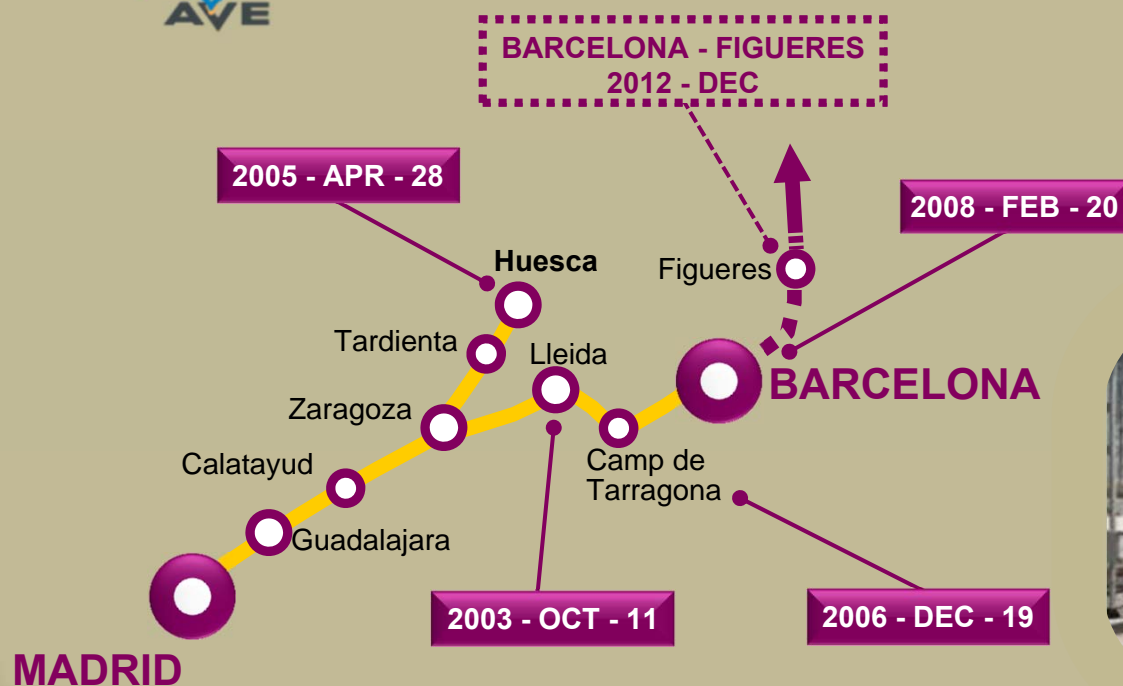
Longest High Speed service in the World:
1,121 km (697 mi)
Average service:
555 km (345 mi)

- Three classes
- High level of service
- Market price
- Profitable
- No government compensations

SUMMARY 1ST QUARTER 2011:

86 trainsets in operation
10 trainsets being manufactured
156 daily services
49,562 daily seats offered

Gradual implementation of HS services in the Madrid-Barcelona corridor



High Speed - Regional 250 km/h (155 mph)

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Avant



Average service:
154 km (96 mi)

- Public service fares, approved by the government
- Single class
- Functional train
- Financial compensations negotiated on a multi-year basis

SUMMARY 1ST QUARTER 2011:

- 35 trainsets in operation
- 27 trainsets being manufactured
- 88 daily services
- 25,009 daily seats offered

High Speed Dual Gauge Services

- Speed 250 km/h (155 mph) using High Speed Lines.
- Up to 220 km/h (137 mph) using conventional lines.

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Alvia

- Conventional Lines
- High Speed lines

Average service: **570 km (354 mi)**



- The Dual Gauge services extend the benefits of the high-speed lines to the conventional network
- Two classes
- Full service
- Market price
- Globally profitable

SUMMARY 1ST QUARTER 2011:








64 trainsets in operation
9 trainsets being manufactured
70 daily services
19,648 daily seats offered

The high speed services in Spain

MAIN FIGURES 2011

HIGH SPEED SERVICES:	FLEET		TRAINS / DAY	SEATS / DAY
	IN OPERATION	MANUFACTURING OR RECEPTION STAGE		
LONG DISTANCE	86	10	156	49,562
REGIONAL	52	10	88	25,009
DUAL GAUGE	64	9	70	19,648
Total:	202	29	314	94,219

Renfe's high speed rolling stock fleet

	LONG DISTANCE					REGIONAL	
	Standard Gauge		Dual Gauge				
							
CLASS	100 R	102 / 112	103	130	120	104 / 114	121
MANUFACTURER	Alstom	Talgo	Siemens	Talgo	Caf	Alstom	Caf
UNITS	24	16 / 23 + 7	26	45	19 + 9	20 / 13	19 + 10
MAXIMUM SPEED Km/h (mph)	300 (186)	330 (205)	350 (218)	250 (155)	250 (155)	250 (155)	250 (155)
SEATS	332 (2 PRM)	316 (2 PRM) 365 (2 PRM)	405 (2 PRM)	299 (1 PRM)	238 (1 PRM)	237 (1 PRM)	281 (1 PRM)
GAUGE	1,435 mm.	1,435 mm.	1,435 mm.	1,435 mm./ 1,668 mm.	1,435 mm./ 1,668 mm.	1,435 mm.	1,435 mm./ 1,668 mm.
IN OPERATION SINCE	1992	2005 / 2010	2007	2007	2006	2004	2008
TOTAL FLEET:	231 TRAINSETS (in operation + manufacturing)						

Integration of different technologies

Joint ventures Renfe - private sector

SIEMENS
renfe

NER TUS
Mantenimiento Ferroviario

March 12, 2002

vossloh
renfe

erion
MANTENIMIENTO FERROVIARIO, S.A.

January 24, 2007

CAF
renfe

actren
Mantenimiento Ferroviario

May 14, 2007

BOMBARDIER
renfe

BTR EN
Mantenimiento Ferroviario

November 28, 2007

ALSTOM
renfe

IRVIA
Mantenimiento Ferroviario, S.A.

January 21, 2008

Talgo
renfe

Tarvia
Mantenimiento Ferroviario

June 03, 2008

Alcatraz
renfe

Alcatraz
Alcatraz

February 26, 2002

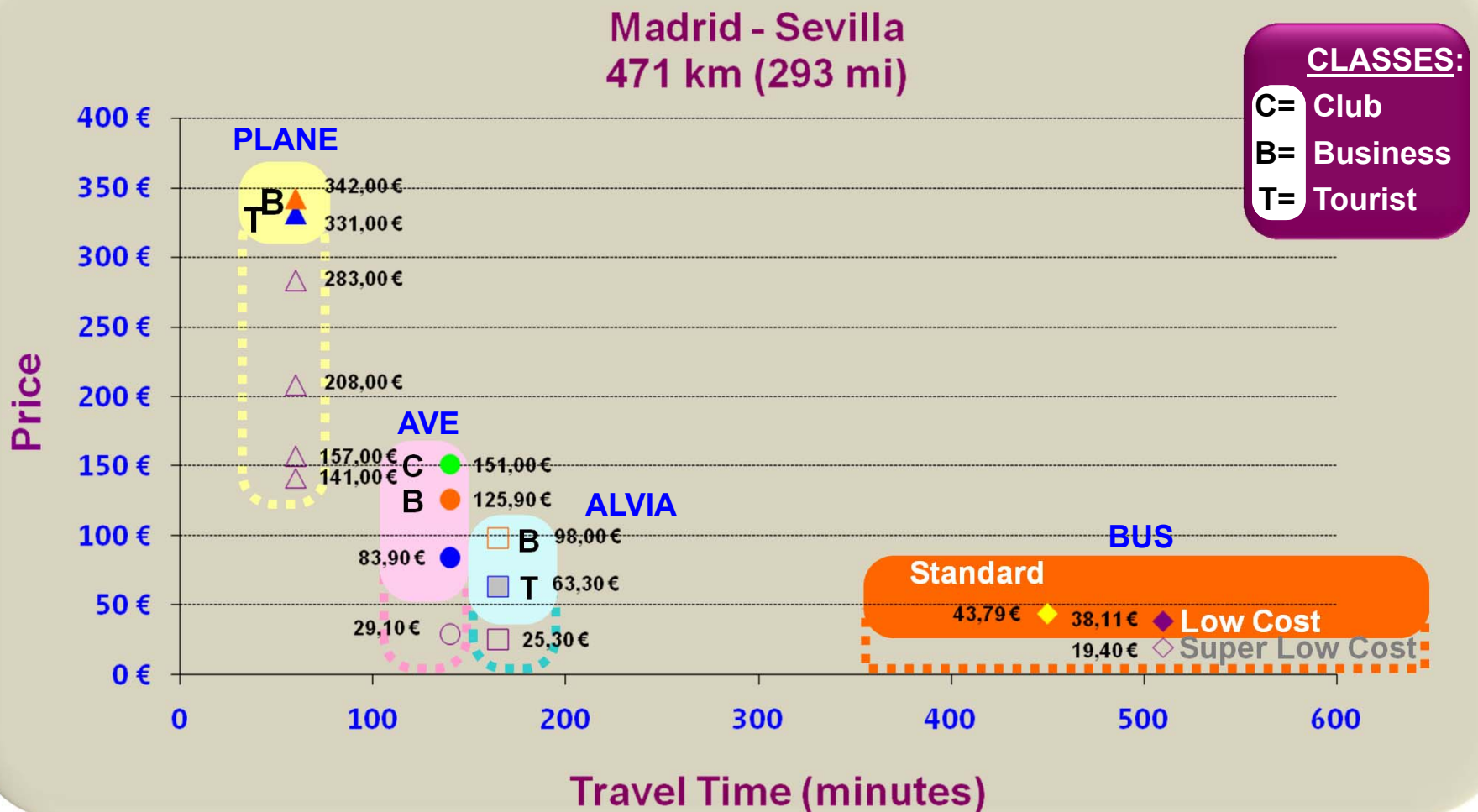


3.3. Price Comparison: Renfe vs. other means of transportation

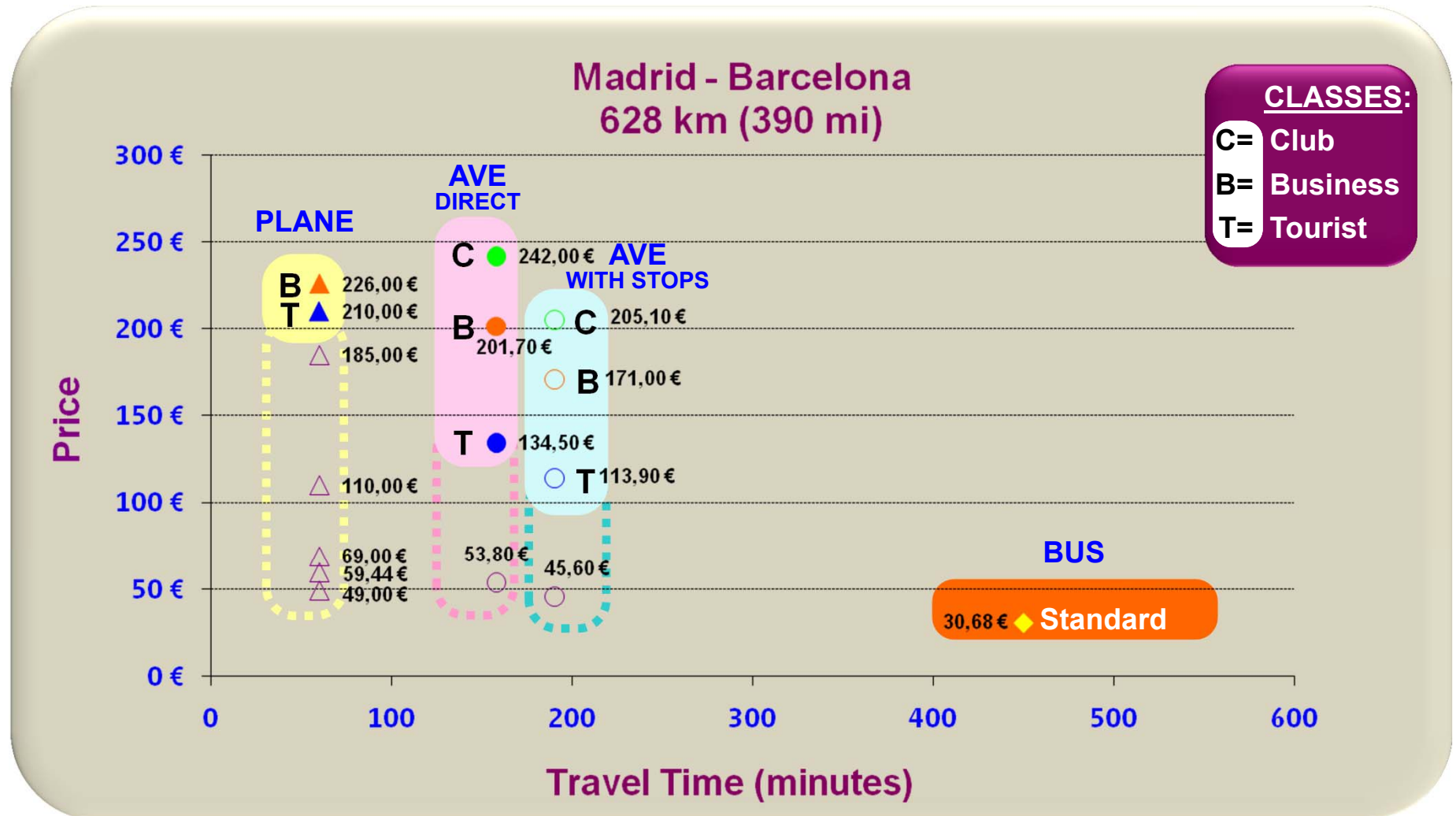


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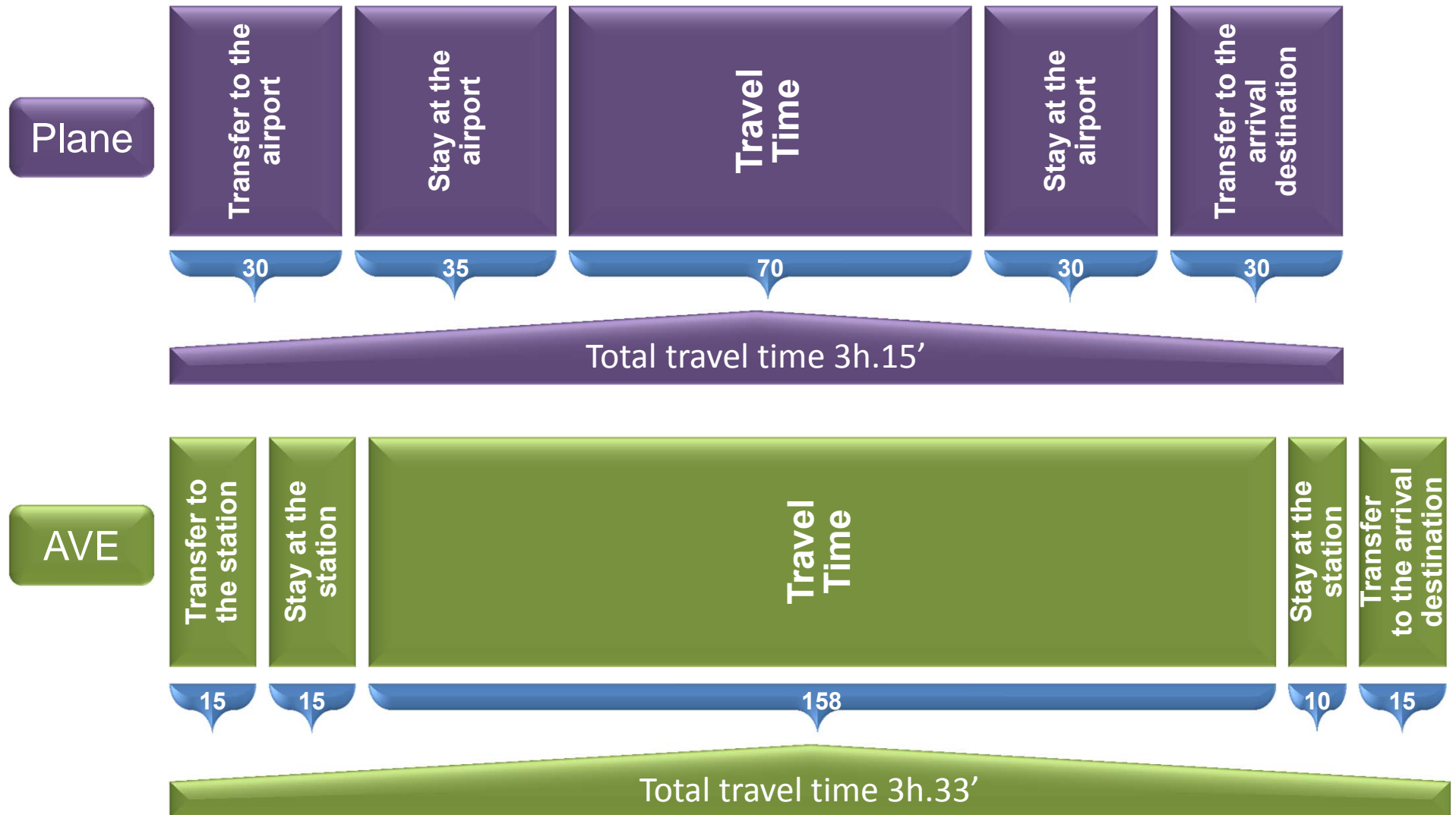
Price comparison. Long Distance trip



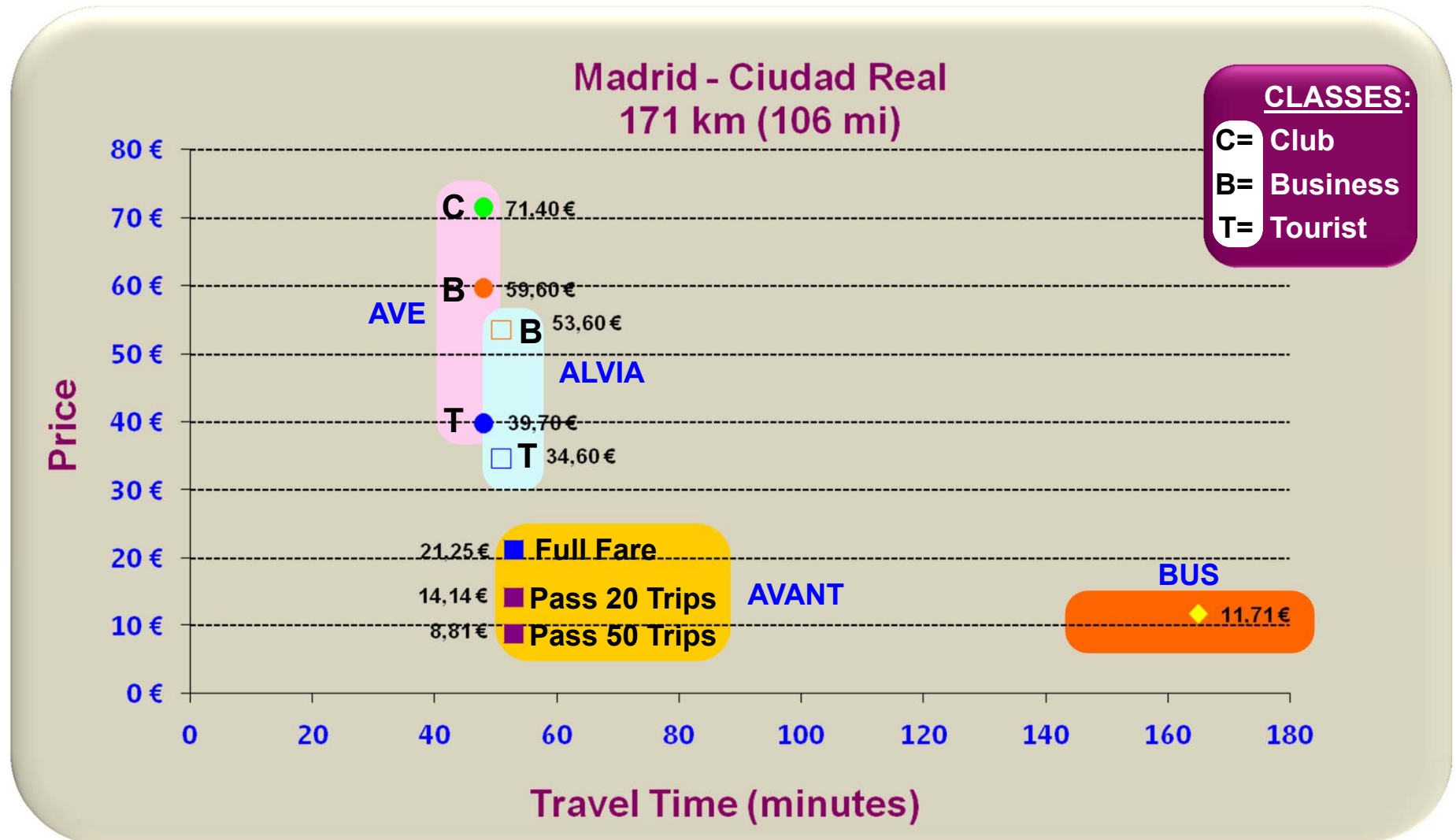
Price comparison. Long Distance trip



Comparison of journey time in the Madrid-Barcelona corridor



Price comparison. Medium Distance trip



3.4. Commitment to quality



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1st Stage: high speed punctuality

- **Date:** September 11, 1994
- **Product:** High Speed Trains

- **Commitment:**

Total ticket price refunded if a train arrives at its destination with a delay of five minutes or more

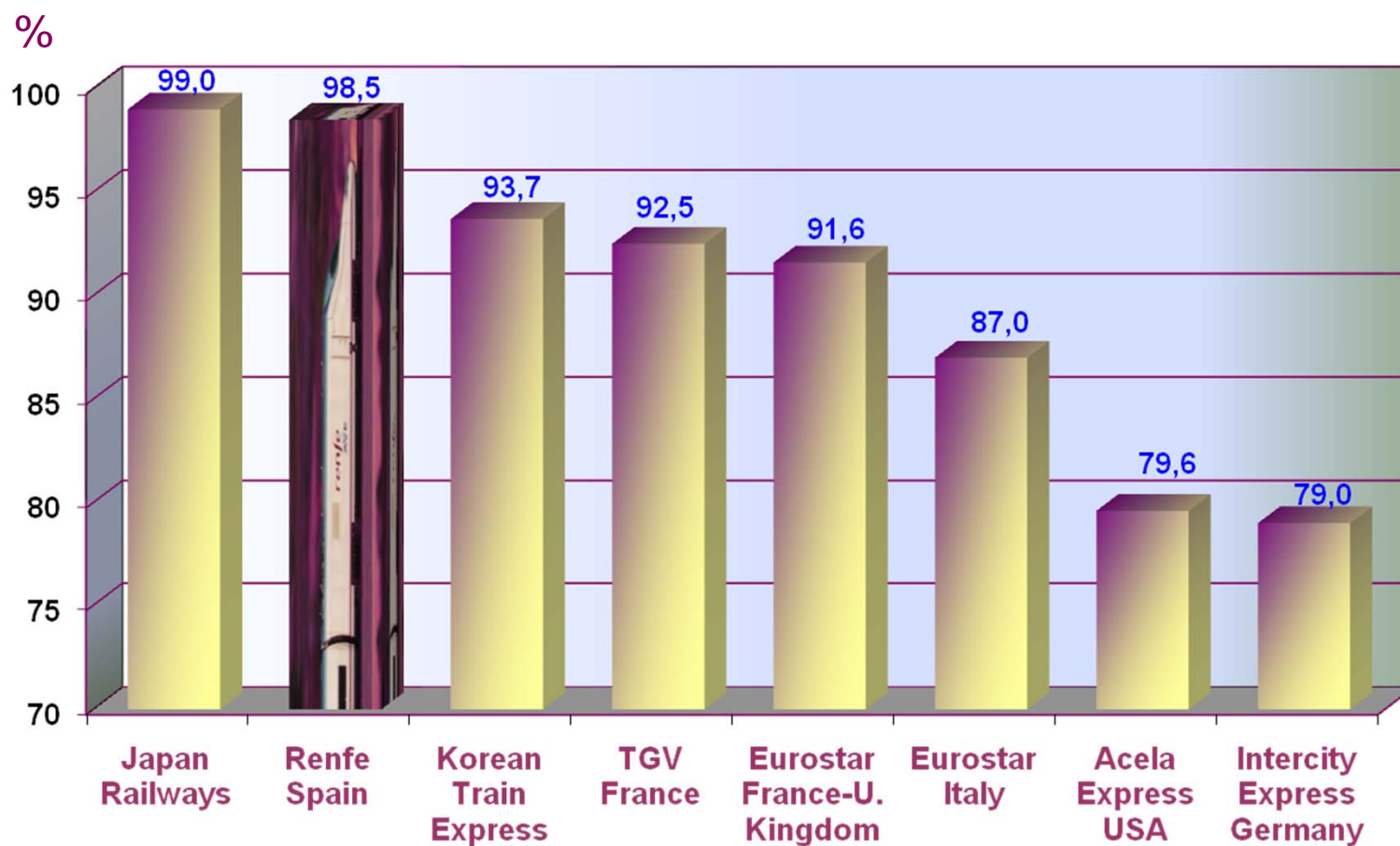
The price is refunded in cash

World Pioneers



High speed train punctuality world ranking

SPAIN, SECOND IN THE WORLD



“AVE - HAPPINESS” VIDEO

2nd Stage: new quality commitments

Success of on-time commitment for AVE trains led to:

- ▶ Gradual implementation of the on-time commitment to other products:
 - **Long Distance**
 - **Regional**
- ▶ RENFE-Operadora undertakes further quality commitments:
 - **Video / Audio, Air-conditioning, WC,**
 - **Meal service at seat, Restaurant/cafeteria**

Compensations for lack or deficiency in services

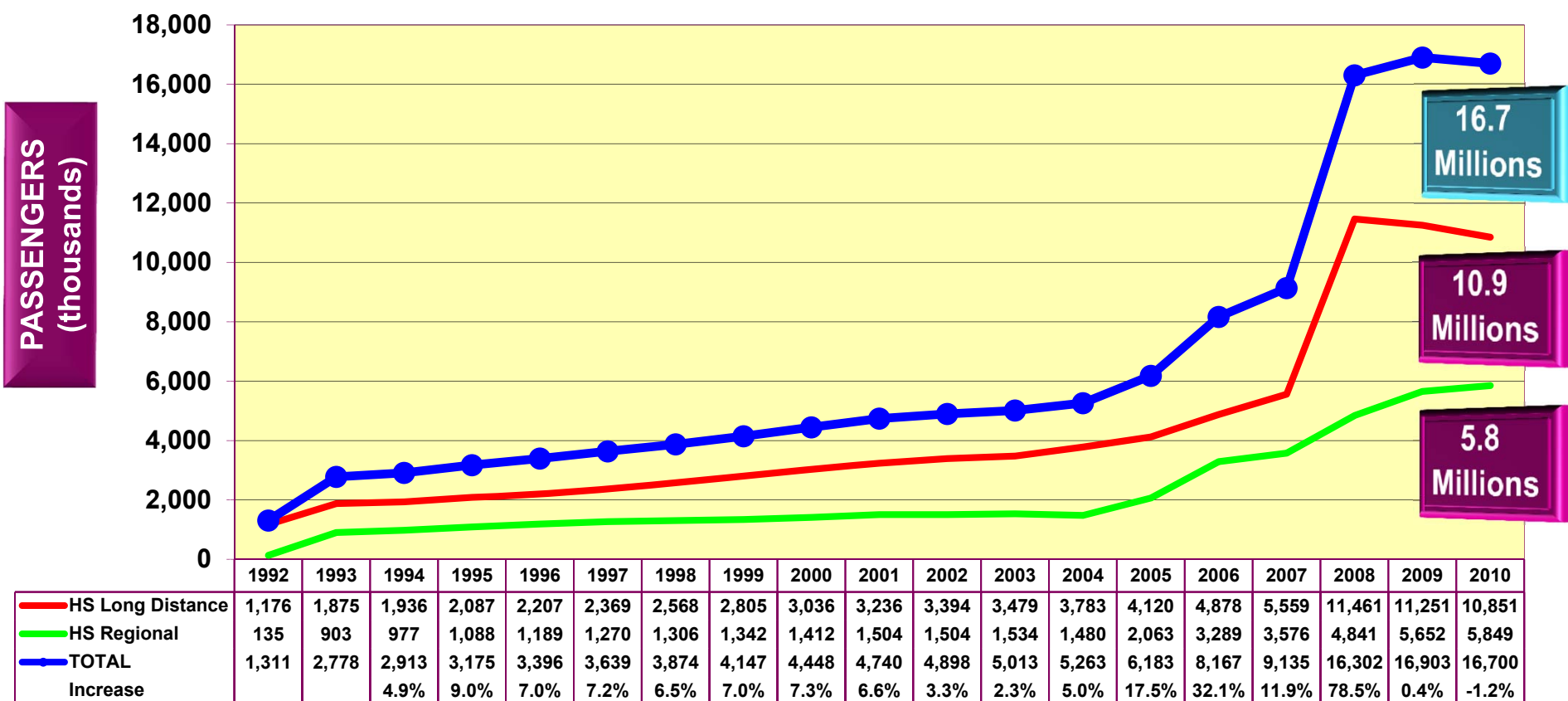
Lack / deficiency of:	% refund
Video / Audio	15%
Air conditioning (total)	100%
Air conditioning (partial)	50%
Toilet	100%
Meal service at seat	50%
Bistro / Restaurant	25%



3.5. Demand in main corridors

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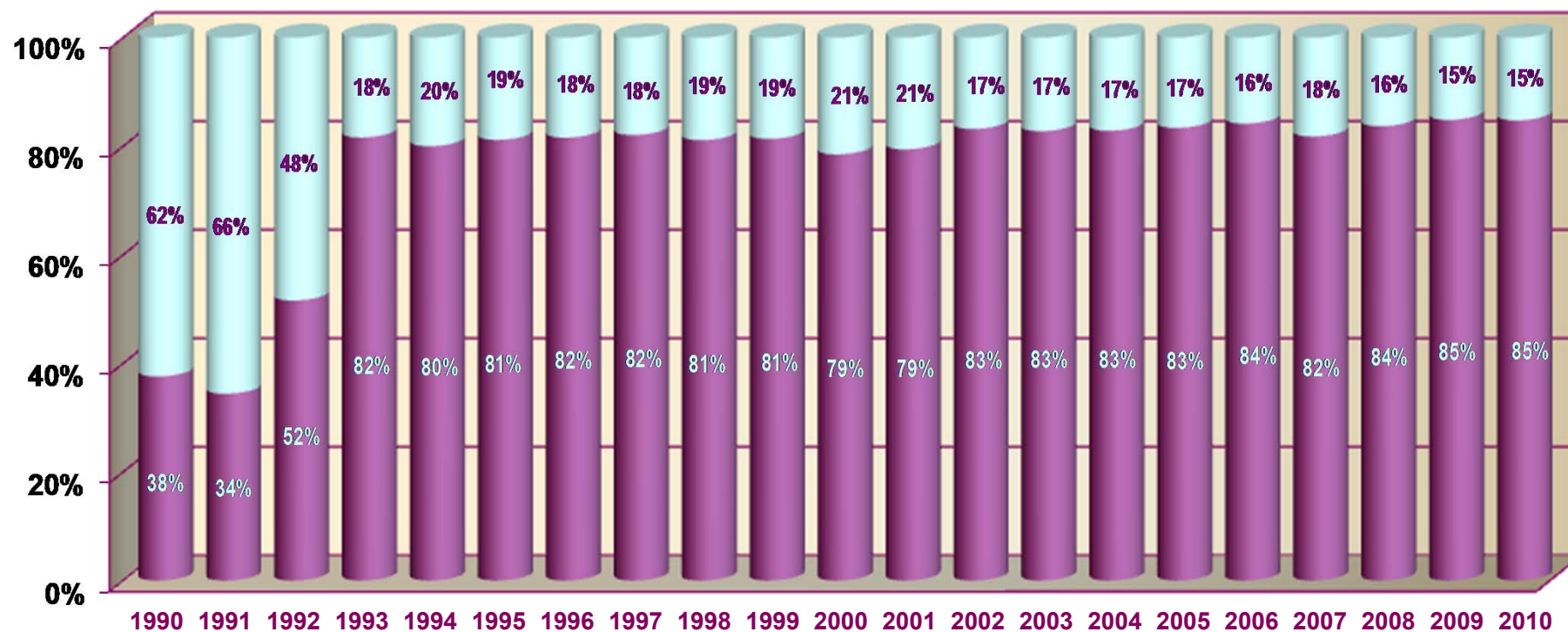
Passenger number evolution



Market share Madrid - Sevilla

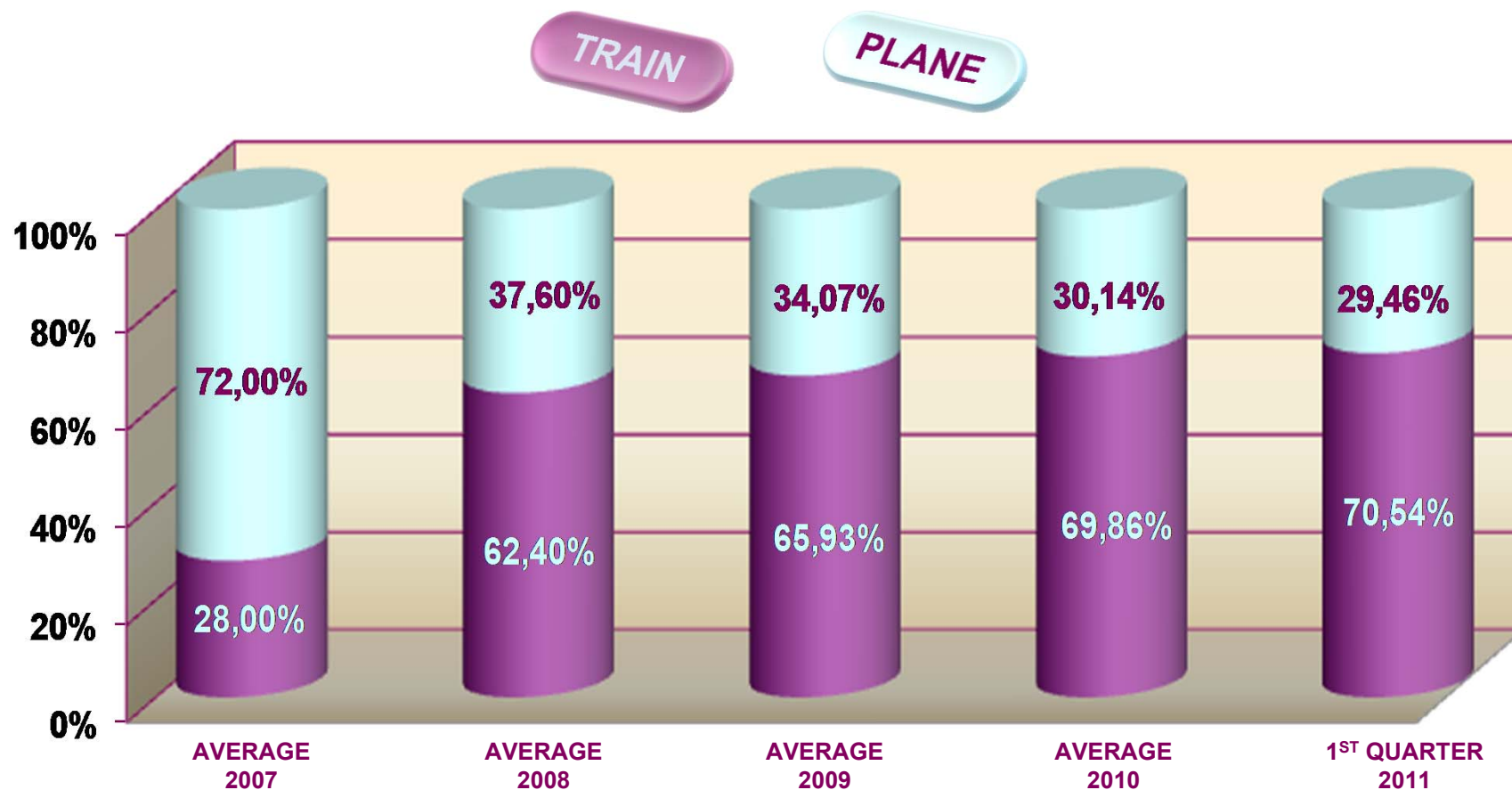
TRAIN

PLANE



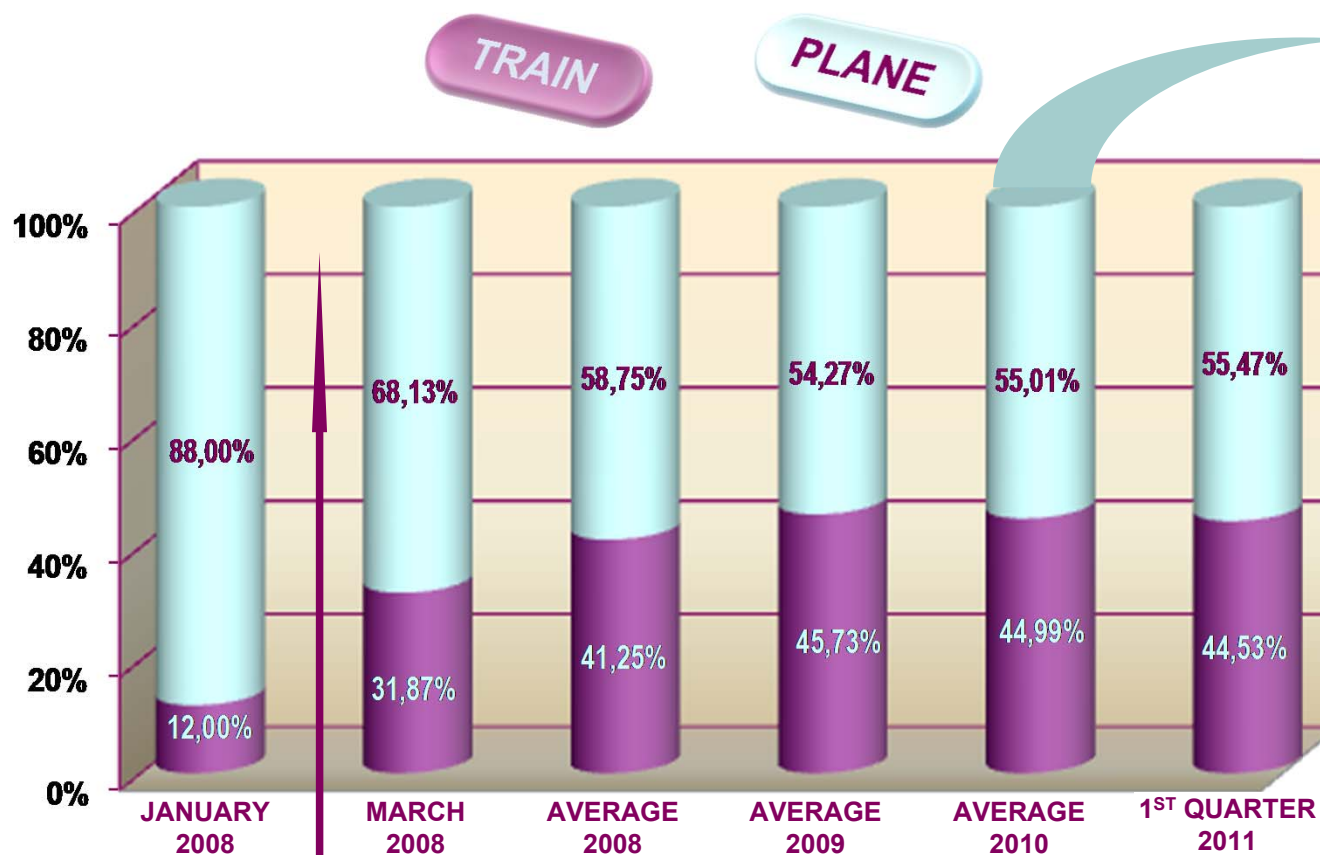
**ON APRIL 21, 1992
THE FIRST HIGH SPEED SERVICE
ARRIVES TO SEVILLA**

Market share Madrid - Málaga



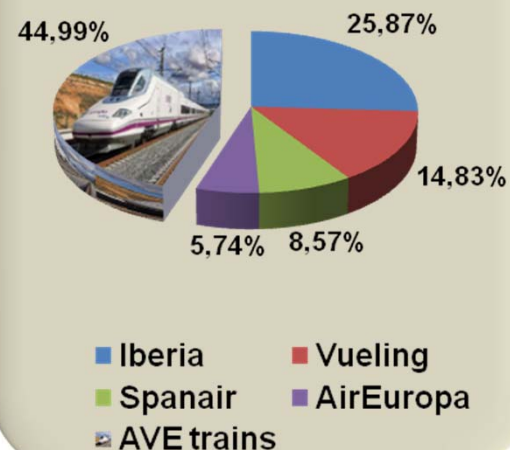
**ON DECEMBER 27, 2007
THE NEW HIGH SPEED SERVICE
ARRIVES TO MÁLAGA**

Market share Madrid - Barcelona

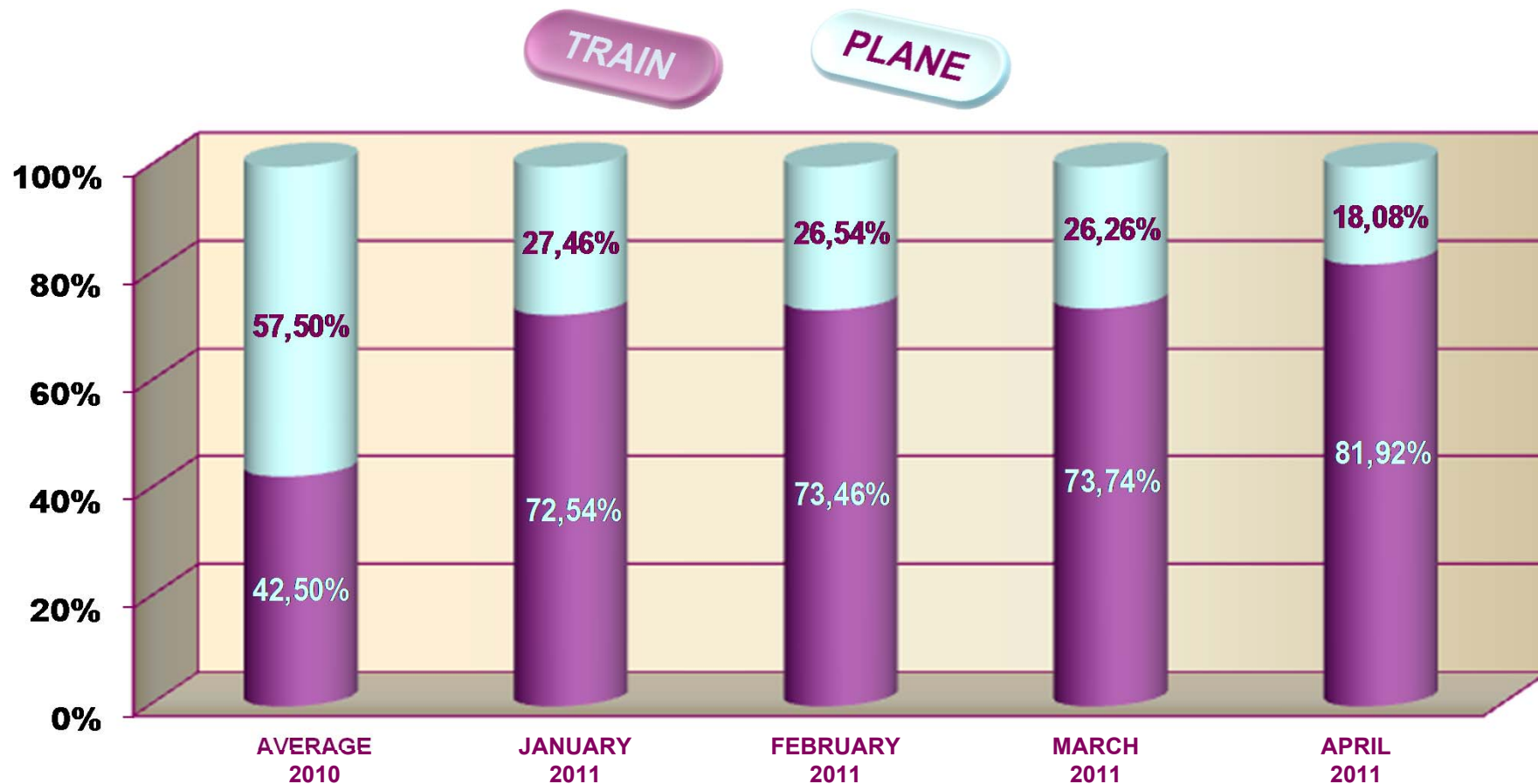


**ON FEBRUARY 20, 2008
THE NEW HIGH SPEED SERVICE
ARRIVES TO BARCELONA**

MARKET SHARE 2010

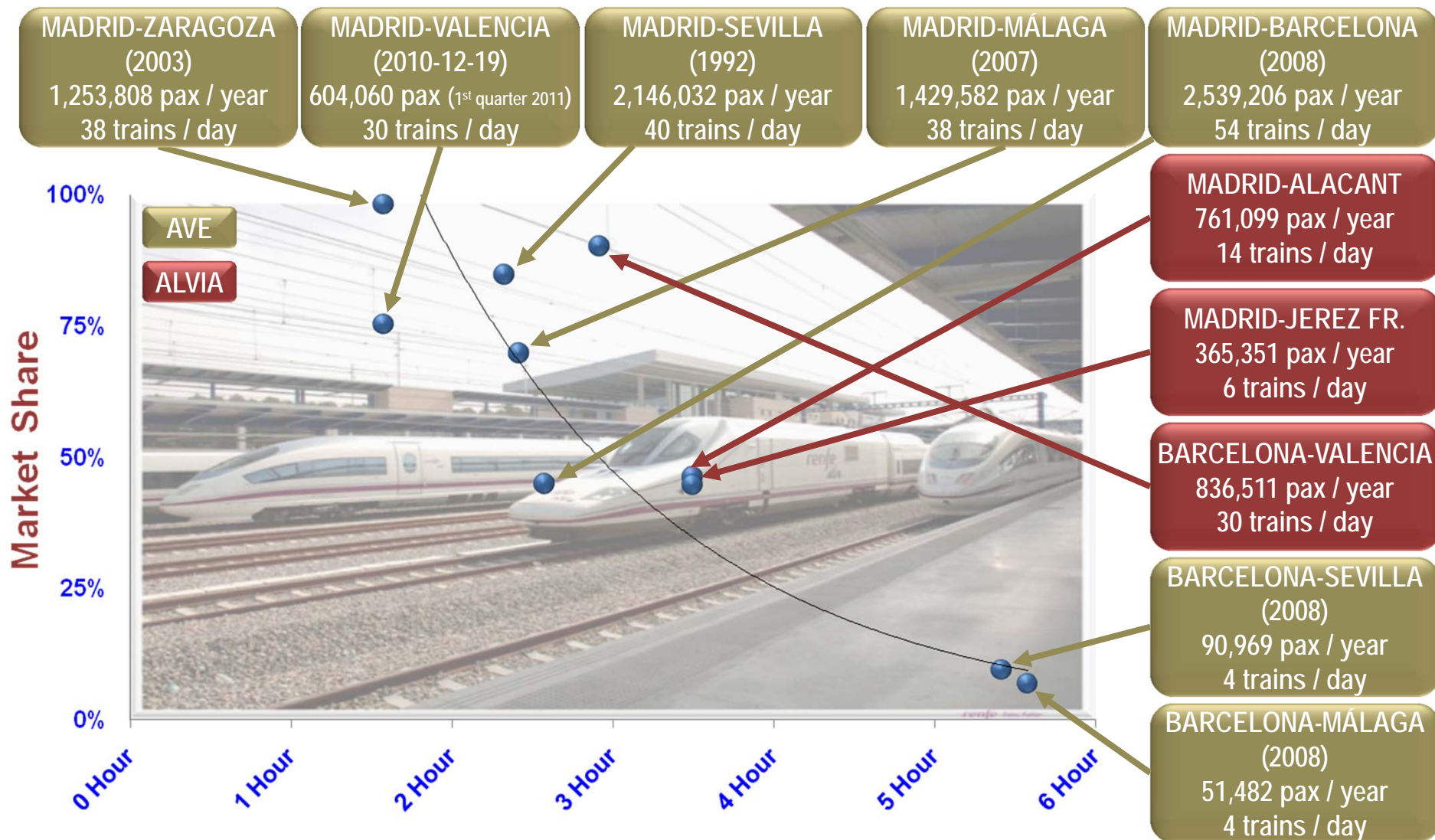


Market share Madrid - Valencia



**ON DECEMBER 19, 2010
THE NEW HIGH SPEED SERVICE
ARRIVES TO VALENCIA**

Market share and travel time



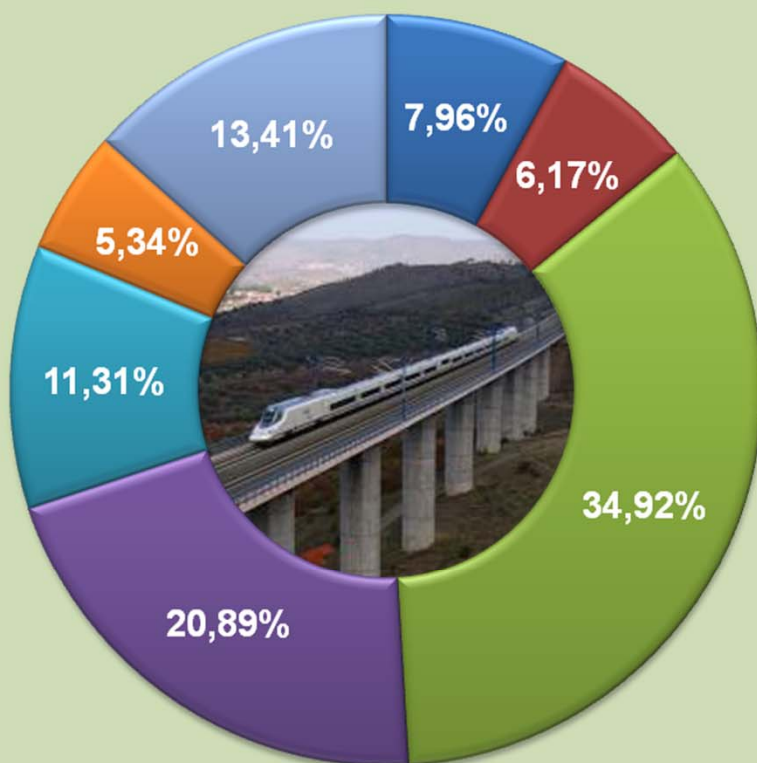


3.6. Operating Costs and Benefits

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Operating costs in the Madrid-Barcelona corridor

Breakdown of Costs



- Personnel
- Traction Energy
- Infrastructure Charges
- Rolling stock
- Services on board and in stations
- External services
- Services provided by other B. Areas

PROFIT 2010: 19.28%

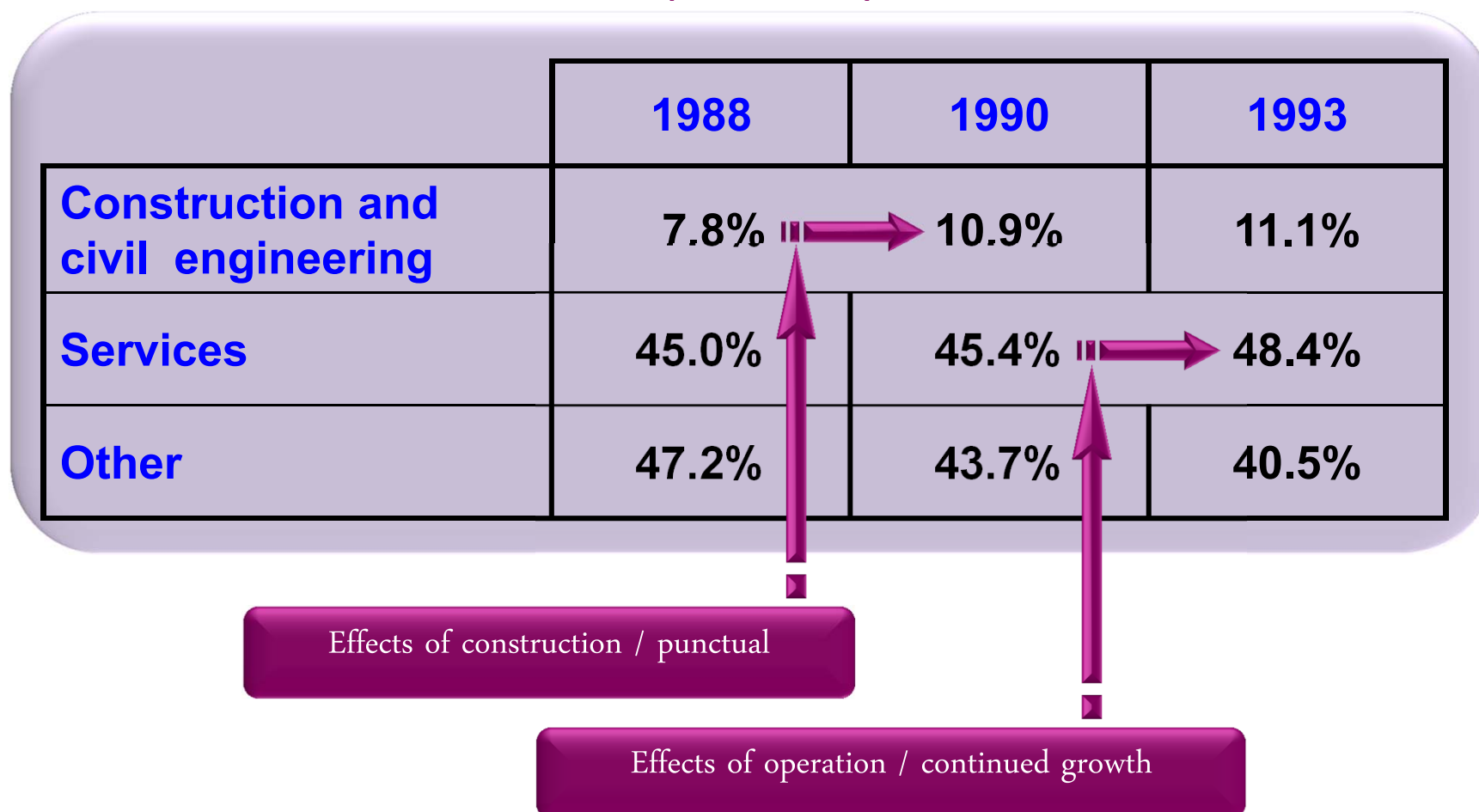
3.7 Benefits of High Speed Services



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Economic benefits

Economic impact in the city of Ciudad Real (% of GDP)



Effects on service industry

Increase in number of hotel beds

	1990 – 2007	Beds 2007 Average
Overall Spain	+ 40%	1,297,649
Madrid	+ 82%	90,125
Ciudad Real	+104%	7,019
Córdoba	+138%	8,819
Sevilla	+ 79%	24,660

Stays grew above average

	1990 – 2007	Stays 2007
Overall Spain	+111%	84,423,433
Madrid	+ 84%	9,307,724
Ciudad Real	+128%	458,144
Córdoba	+153%	997,418
Sevilla	+145%	2,428,605

Increase in the average stay (In number of nights)

	1992	2007	
Overall Spain	4.14	3.22	↓ ↓
Madrid	2.04	1.88	↓
Ciudad Real	1.35	1.74	↑ ↑
Córdoba	1.55	1.59	↑
Sevilla	2.14	1.85	↓

Evolution of the population

	FIRST YEARS	CONSOLIDATION	
	1990-1995	1996-2006	POPULATION 2006
OVERALL SPAIN	+1.44%	+12.70%	44,700,000
Madrid	-2.92%	+9.06%	3,100,000
Ciudad Real	+8.31%	+18.07%	70,000
Puertollano	+1.09%	-0.59%	50,000
Córdoba	+3.50%	+5.43%	320,000
Sevilla	+6.10%	+0.99%	705,000

- High increase of population

- Shortcut of population loss

1st Stage

High impact of construction and first years of operation

2nd Stage

End of effects

External costs savings in Madrid-Barcelona corridor

In total the Madrid-Zaragoza-Barcelona corridor, with more than 5,500,000 passengers, saved 141.4 million Euros in external costs in 2010

Breakdown of external costs savings:



- 77.9 million due to climate change
- 8.8 million due to air pollution
- 53.5 million due to accidents
- 1.2 million due to other effects *

* Urban effects on the landscape and nature, occupation and fragmentation of land and other effects.

Environmental benefits of high-speed rail in Spain

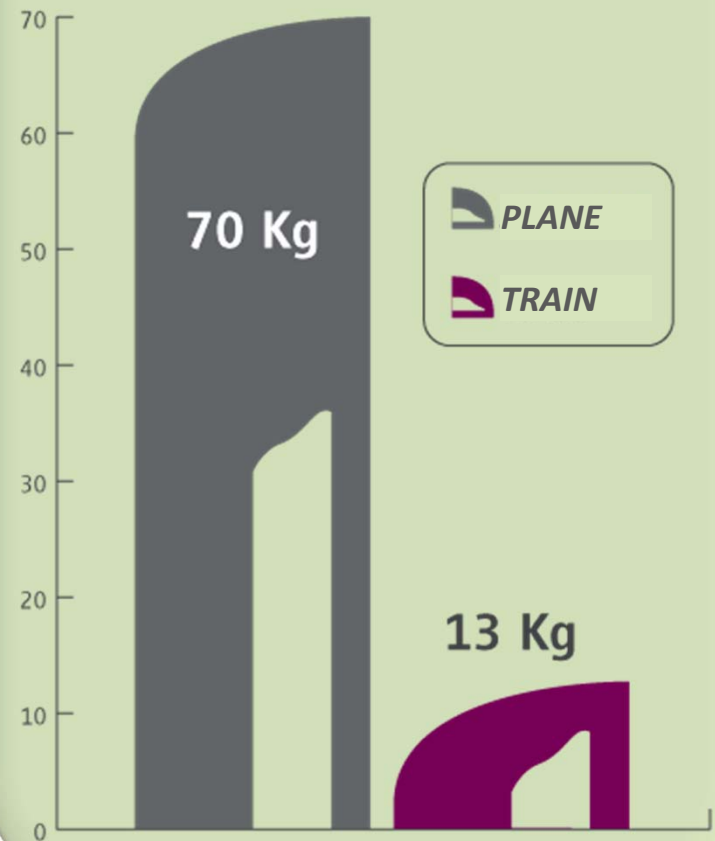
Main facts about savings (per year):

- Climate change - CO₂ Tons → 522,251
- Energy consumption - TOE (Tons of oil equivalent) → 144,251
- Road Fatalities - Number → 68

The Madrid-Barcelona corridor alone prevents the emission of 250,000 CO₂ tons per year!, equivalent to the housing emissions of Zaragoza (700,000 inhabitants).



CO₂ emissions per passenger in the Madrid-Barcelona Corridor.



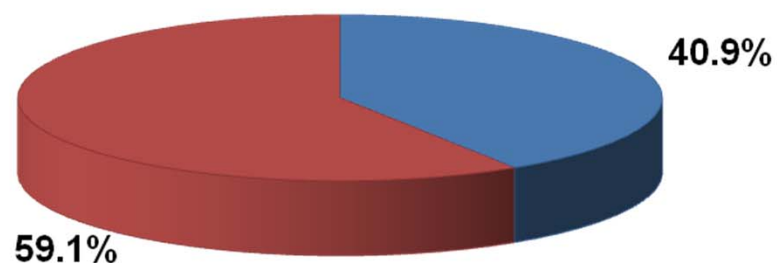
3.8. Customer Profile & Perceived Quality (CPQ)



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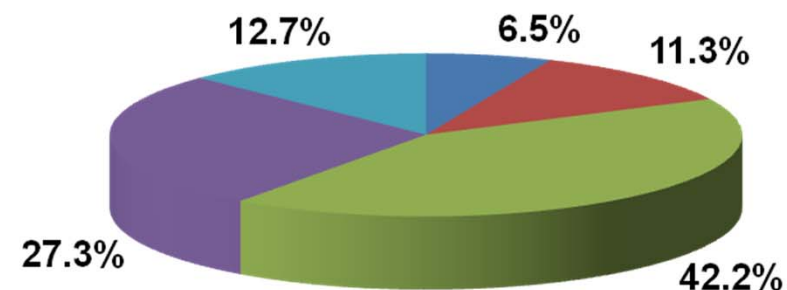
High Speed - Long Distance CUSTOMER PROFILE

GENDER



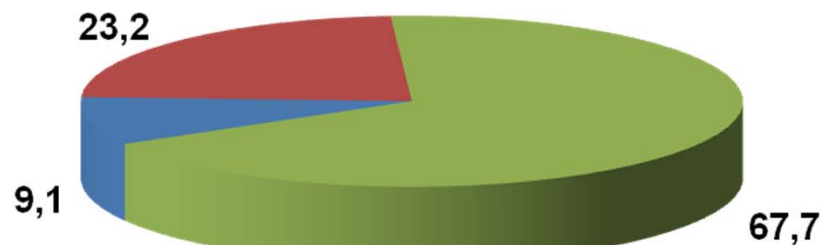
Women Men

AGE



16-24 25-29
30-44 45-59
60 and more

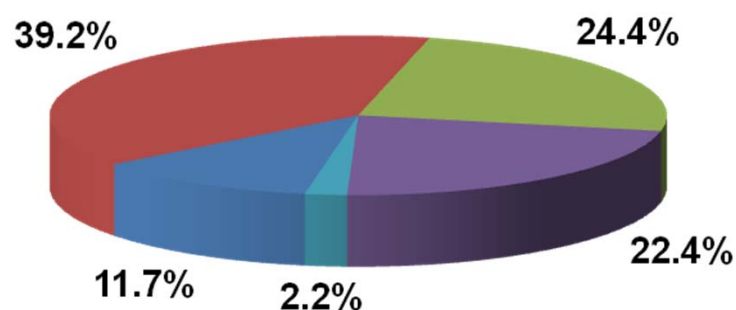
EDUCATION LEVEL



Elementary
Secondary
University

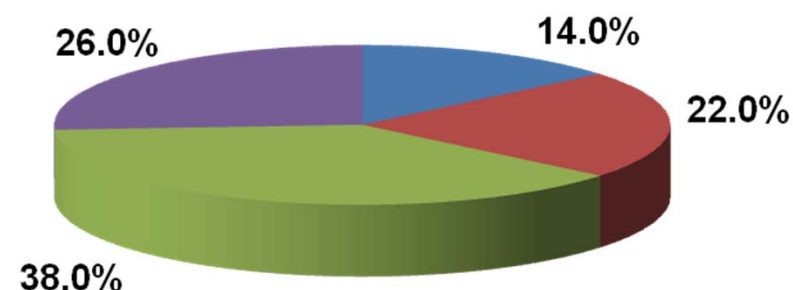
High Speed - Long Distance TRAVEL PROFILE

REASON FOR TRAVEL



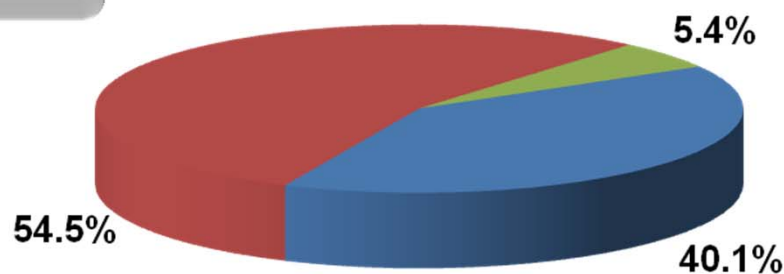
Work Business
Leisure Family
Other

FREQUENCY (*)



High Medium High
Medium Low Low

TICKET PAID BY



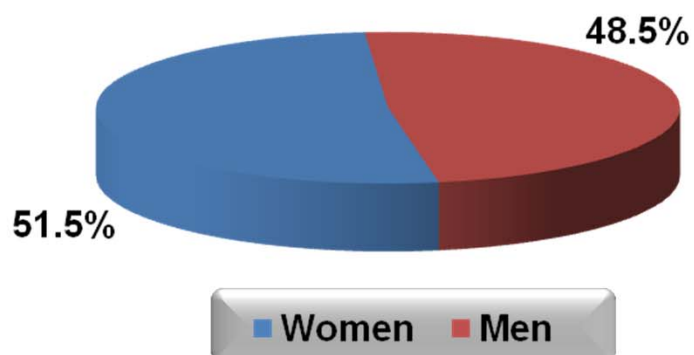
Company Traveller
Other

(*) **High:** twice a week or more - **Medium High:** twice a month or more
Medium Low: once every three months or more - **Low:** once a year or the first time

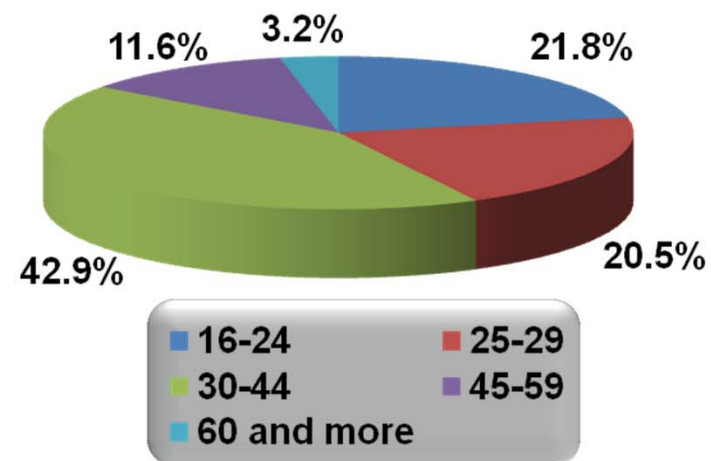
High Speed - Regional CUSTOMER PROFILE

renfe
Avant

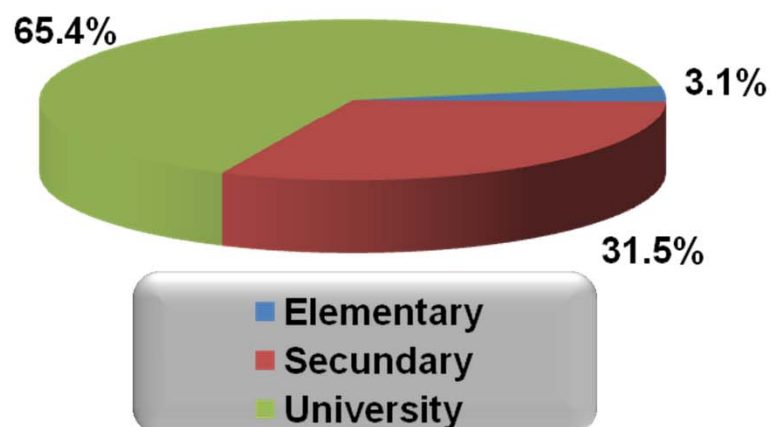
GENDER



AGE

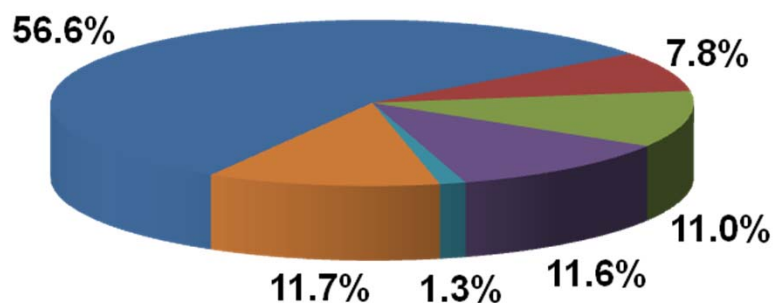


EDUCATION LEVEL



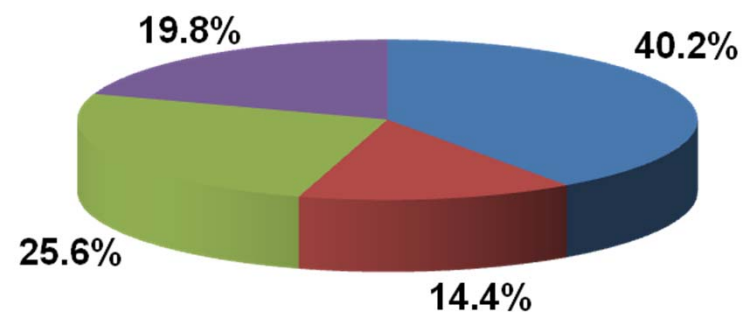
High Speed - Regional TRAVEL PROFILE

REASON FOR TRAVEL



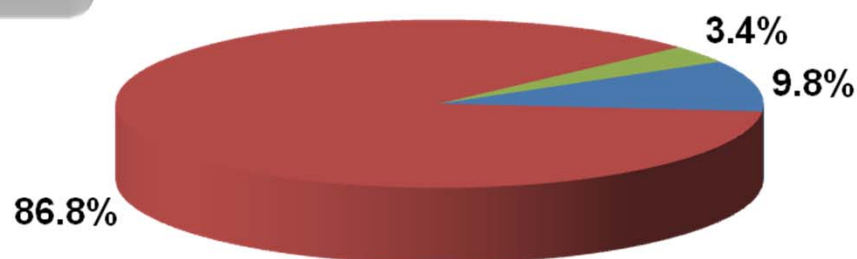
Work
Holiday
Other
Bussiness
Family
Estudier

FREQUENCY (*)



High
Medium Low
Medium High
Low

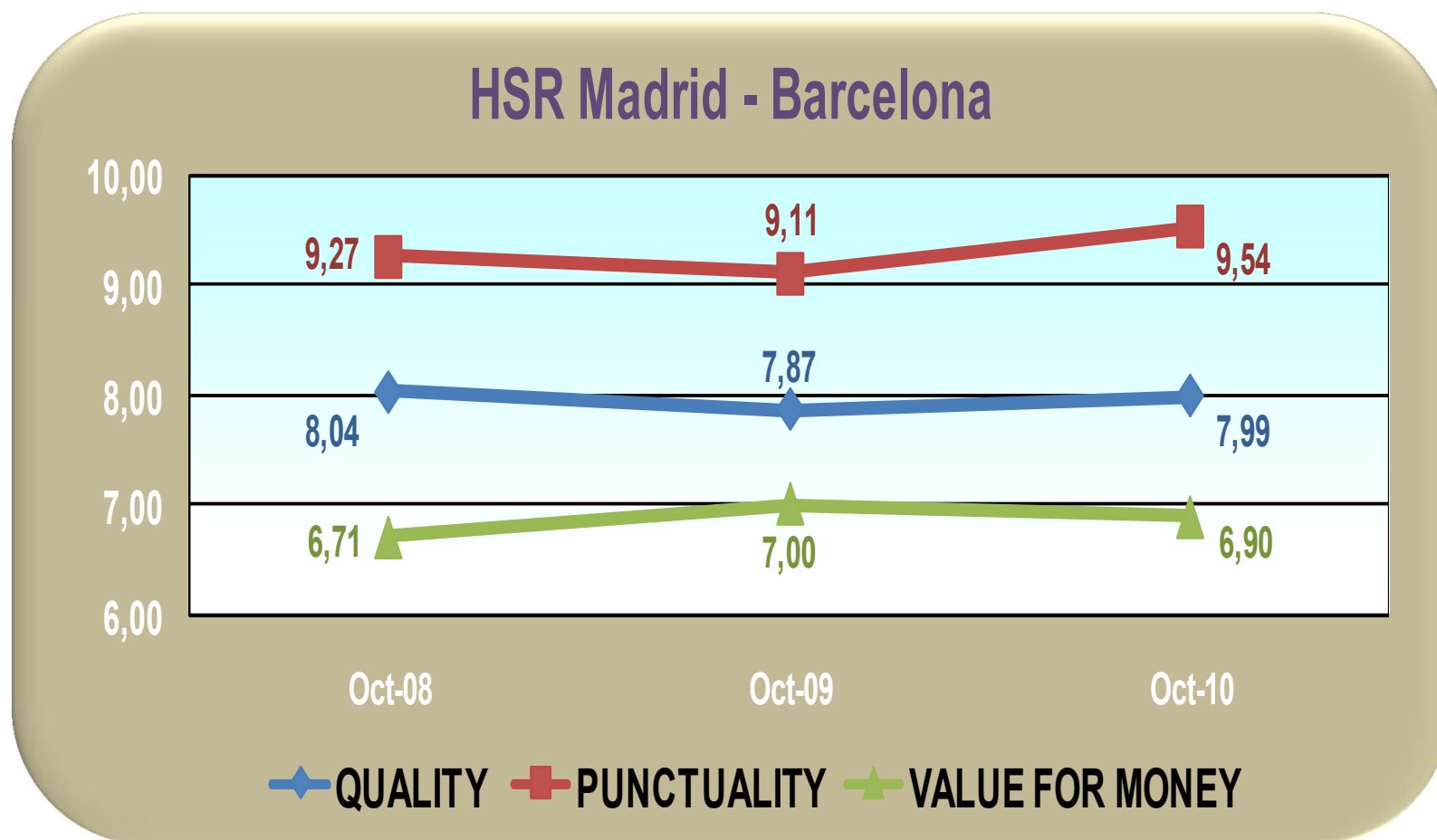
TICKET PAID BY



Company
Traveller
Other

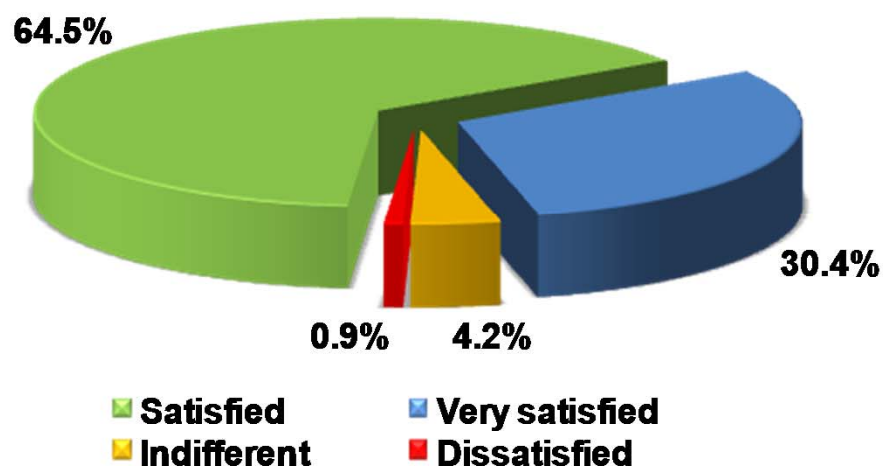
(*) **High:** twice a week or more - **Medium High:** twice a month or more
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High speed railway service customer satisfaction level

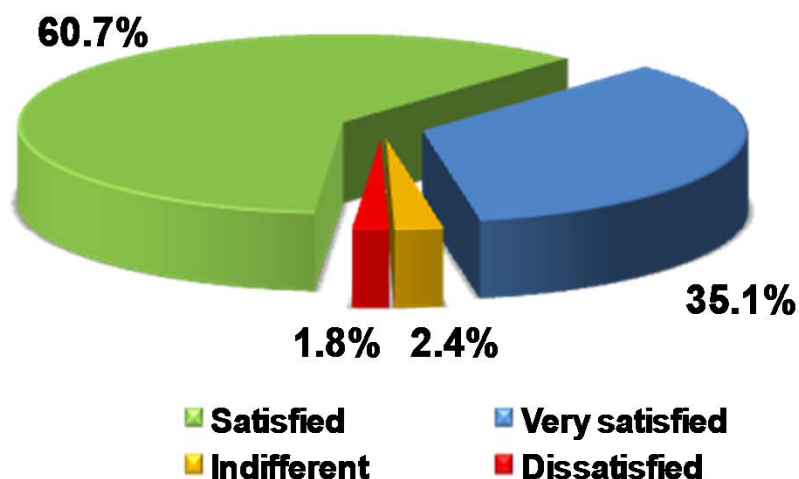


We have satisfied customers and we keep them satisfied year after year

*First High Speed Line Madrid - Sevilla
Satisfaction after 16 years of operation.*



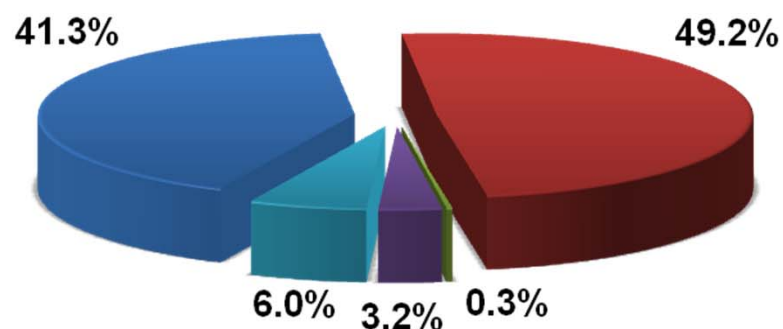
*Latest High Speed Line Madrid - Barcelona
Satisfaction in the second year of operation.*



Source: Annual study of AVE products

Image of AVE among the general public

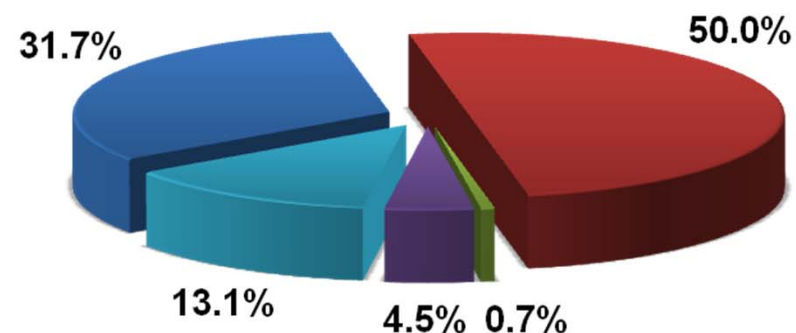
Residents in the corridor



■ Very good
■ Bad
■ Don't know / No response

■ Good
■ Not bad

Residents outside the corridor



■ Very good
■ Bad
■ Don't know / No response

■ Good
■ Not bad

Source: Study of the image of AVE among the Spanish population

Thank you for your attention.



renfe